

A SYSTEM OF ABBREVIATIONS FOR USE IN MUSCOID DESCRIPTION

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Nearly all improvements on time-honored custom experience hard sledding at the start and the writer's system of muscoid abbreviations is no exception to the general rule. At least one person has cried out loudly against it, while two or three publications have declined to print it. On the other hand, six publications have accepted it to date. Like other useful innovations, the system has come to stay, for it has already demonstrated its advantages. As a matter of fact, it is nothing more than an extension, to descriptive texts and synoptic tables, of the current system of abbreviating anatomic parts on published plates, to which no one has ever objected.

It is highly desirable that all students adopt this system regardless of the language in which they write. It not only cuts down the required space to about half but also works for uniformity and clarity. Universally adopted, it would greatly facilitate the study of descriptions in all languages, for its construction is simple and all students understand the English terms from which it is built. The purpose of this article is to present an analysis of it, whereby any student familiar with the terminology may acquire facility in its use in half an hour.

With the exception of the capital letters used for wing veins, wing cells and abdominal sternites five and ten, all are lower case letters unless the abbreviation begins a sentence, in which case the first letter is capitalized. If an abbreviation consisting of a single letter begins the sentence, there is no conflict with capital letters referring to the wings, for these are always in combination with Arabic numerals. The sternite capitals are suffixes.

Alone, a means acrostichals; pra, preacrostichals and pa, post-acrostichals; otherwise final a means angle as ra, right angle; or antennæ as ba, base of antennæ; or ampulla as ga, greater ampulla; or alar as ia, intraalars; or anterior as la, lateral anterior

bristles. The prefix *a* means acute as *aa*, acute angle; or anal as *af*, anal forceps. *An* means antennæ; *ar*, arista; *ab*, abdomen; *aps*, apical scutellars; *ang*, angular; *arc*, arcuate. The arista and antennal joints are designated by placing the Arabic numerals before the abbreviation; *anx* is antennal axis; *anf*, antennal fossa or fossæ. Length of abdomen is *abl* and width of abdomen, *abw*; thus *w* as suffix to a noun means width, while *l* in similar circumstances means length except in *arl*, *oml*, *moml*, *vl*, *fel*, *frl*, *sql*, *ml*, meaning respectively, arista level, oral margin (of epistoma) level, medial oral margin level, vibrissal level, facialia, frontalia, squamulæ, median line, plumose.

The single letter *b* and *b* followed by *l* or *w* mean body. As a prefix *b* means base or basal as *ba*, base of antennæ; *bb*, base (of vein) bristled or bristled only at base; *bjs*, basal joints; *banjs*, basal antennal joints; *barjs*, basal arista joints; *bls*, basal or anterior lateral scutellar bristle; *bsg*, basal or actual first abdominal segment; *bsc*, basal section of costa. *Br* is bristle, *brs* is plural and *brst* is bristled.

Alone, *c* means clypeus; *cl*, length of clypeus, *ew*, width of clypeus; *epl*, plane of clypeus; *cs* means costal spine; *ex*, *coxæ*; *ch*, cheeks and *chg*, cheek grooves; *cb*, cubitulus; *cls*, claws; *cil*, ciliate; *col*, coloration.

The letter *d* refers to discal bristles; *dr*, discal row of bristles; *ds*, discal scutellars; *md*, median discals. *Dec* means decussate or crossed and *div* means divaricate or spreading, both referring only to bristles.

E means eyes; *em*, eye middle; *el*, length of eye; *ew*, width of eye; *ep* means epistoma; *epl*, length of epistoma; *epw*, width of epistoma; *epp*, epistomal profile; *eppl*, epistomal plane; *epe* means epicephalon and *ept* is epaulet. *Eq* means equal to, equals or equalling; *eql* means equilateral.

F is femora; *ff*, front femora; *mf*, middle femora; *hf*, hind femora; *fc* is face; *fel*, facialia; *pfel*, parafacialia; *few*, width of face; *felw*, width of facialia below; *pfew*, width of one parafacial in middle; *fcp*, facial profile; *fcc*, facial carina; *fed*, facial depression; *fco*, facioorbitals; *fp*, facial plate; *fr* means front; *frl*, frontalia; *pfrl*, parafrontalia; *pfrw*, width of one parafrontal in middle; *frlw*, width of frontalia; *frll*, length of frontalia; *frls*,

striae of frontalia; frw, width of front; frp, frontal profile; frfep, frontofacial profile; feorp, faciooral profile; fro, frontoorbitals; pfro, proclinate frontoorbitals; rfro, reclinate frontoorbitals; frs, frontals; frr, frontal rows of bristles; fm means fulcrum; fls means flowers. Otherwise initial f means following as fjs, following joints (tarsi except metatarsi); or front as fph, front posthumeral bristle; fst, front sternopleural; fwm, front margin of wing; fts, front or prothoracic spiracle; fex, front coxæ; fels, front claws.

Ga is greater ampulla of epipleura; gno is genoorbitals; gen is geniculate.

H is head; hh, head height; hl, length of head; hw, width of head; hp, head profile; hs means haustellum; hpl, hypopleurals; hm, humerals; hy means hypopygium; hyp, hypopygial profile; hysg, hypopygial segment, with lhygs, etc.; hytg, hypopygial tergite. The prefix h means hind as hst, hind sternopleural bristle; hph, hind posthumeral; hls, hind lateral scutellar; hwm, hind margin of wing; hmtt, hind metatarsi; hts, hind (functional) or mesothoracic spiracle and htvs, valve of same.

Ia means intraalars; pri, preintraalars; pi, postintraalars; ivrs means inner verticals; ih, intrahumerals; ipal, intrapostalars; ipral, intraprealars; iv is inner pair of thoracic vittæ; ic, inner hind corner of squamæ; isgs, intermediate abdominal segments or third and fourth actual segments (usually second and third apparent segments); ipr, inferior proximal process of remigium ("subcosta"); ifrel, infraclinate.

J means joint and js is plural.

L means legs; lf, front legs; lm, middle legs; lh, hind legs; lb is labella; ln, lunula; lx is longitudinal axis. Otherwise initial l means lateral as lp, lateral plates of postscutellum; ls, lateral scutellars; ld, lateral discal bristles of abdominal segments; la, lateral anternors of same; lm, lateral marginals of same; or lower as lbe, lower border of eye; lbh, lower border of head, being lowest portion of oral profile; loo, lower occipital orbits; loce, lower occiput; or last as lsc, last section (of a vein); ltj, last tarsal joint.

M means median as in ml, median line; also marginal as in mm, median marginal bristles of abdominal segments and mr, mar-

ginal row of bristles; md, median discals of same; ma, median anterior bristles of same; mv, median vitta; mom, median oral margin, in which the final m means margin; or meso as in mplr, mesopleura and ms, mesopleural bristles; mms, median mesopleurals and mss, mesopleural-spiracular bristle; msc, mesoscutum; or middle as in mls, mex, mtr, mf, mtb, mt, mmtt, and meta as in mtt, metatarsi; or mouth as in mw, mouth width of 5R or apical cell. Mach is macrochaetæ and mich is microchaetæ.

Np means notopleural bristles and nplr means notopleura.

As a prefix o means obtuse as in oa, obtuse angle; or oral as in om, oral margin of epistoma and omb, oral membrane of same, also oml, oral margin level, but orp is oral profile; or outer as in ov, outer pair of thoracic vittæ and ovrs, outer vertical bristles; or occipital as in oo, occipital orbits, final o thus meaning orbits. Oc means ocelli; oec, occiput; oes, ocellar bristles; oces, occipitocentral bristles; oct, ocellar triangle; ocb, occipital beard; oef, occipital fringe (of bristles); ocar, occipital area; ocp, occipital profile; oepl, occipital plane.

P means proboscis; pr, pair both singular and plural; plp, palpi; pt, ptilinum and pts, ptilinal suture; per, sharp piercer of female fly; psl, peristomalia and pslr, peristomal row of bristles; plr, pleura and ptplr, pteropleura; pb, pubescent; pc, pectinate; pl, plumose; pet, petiolate; pol, pollinose. The prefix pr means presutural or before the transverse suture of the mesoscutum except in the cases of pral, prealar bristles and praps, preapical scutellars; in any case it means pre or before, as in prse, prescutum. The prefix p means postsutural when applied to bristles or parts of the mesoscutum, as in pse, postscutum; post when applied to bristles of the vertex; pro when applied to pleural bristles and parts, as in pstn, prosternum and pst, prosternals; proclinate when applied to orbital bristles and para when applied to head parts. As suffixes to nouns, p usually means profile and pl always means plane. Fp means facial plate; ump, upper section of median plate of postscutellum. In accord with above prefixes, pal means postalars; pi, postintraalars and pri, preintraalars; ps, postsuturals and prs, presuturals; psa, postsupraalars and prsa, presupraalars, ph, posthumerals; pp, propleurals and pplr, propleura; prep, preepaulet; paw, postalar wall or outer

vertical wall of the postalar callus and praw, wall of the prealar callus; in accord with both prefix and suffix, pfepl is parafacial plane and pfrpl, parafrontal plane.

As prefix, r means right as in ra, right angle; rm is remigium; rcl, reclinate and rfro, reclinate frontoorbitals.

Sc means scutellum; sq, squamæ and sql, squamulæ; sqf, squamal fringe and sqj, junction of squama and squamula; sqplr, squamopleura; sg, abdominal segment and sgs plural, with 1sg, first apparent abdominal segment, etc.; st, sternopleurals and stplr, sternopleura; stn, abdominal sternite and stns plural, with 1stn, first actual abdominal sternite, etc.; stn V, fifth actual sternite, being the sternite of the anal or fourth apparent abdominal segment, and stn X, tenth sternite; stp, stump (of vein); sept, subepaulet; sa, smaller ampulla; sin, sinuate and sprel, supraclinate.

T means tarsi, with ft, mt and ht, front, middle and hind tarsi; tb, tibiæ, with ftb, etc.; tg, tergite and tgs plural, with 1tg, etc.; th, thorax; thl, length of thorax; thw, width of thorax; thv, thoracic vittæ; ts, transverse suture; tr, trochanters, with ftr, etc.; tyr, tympanic ridge and typ, tympanic pit; thk, thickened.

Ump means the upper section of the median postscutellar plate, which may better be known as the infrascutellum, to distinguish it from the postscutellum of which it forms a part; it exists as a mere rim in most of the lower muscoid forms but is well developed in the higher forms. Ums means the upper mesopleural bristles; uoo, upper occipital orbits and uoce, upper occiput.

V is is vibrissæ; va, vibrissal angles; vap, vibrissal angle profile; var, vibrissal area; vx, vibrissal axis; vl, vibrissal level; vr, vertex; vrw, width of vertex; vrs, vertical bristles; vn, venter and vnc, ventral carina of female fly.

When used alone, w means wings; wb, wing base or bases; wm, wing margin; wt, wing tip; wv, wing veins; ww, width of wing and wl, length of wing; wp, wing pattern. Wr is wrinkle; w following a fraction means way.

The multiplication sign \times means times, always used after an Arabic numeral.

It saves much space to substitute & for and, and to use the Arabic numerals for numbers.

The capital letters combined with Arabic numerals referring to wing veins and cells are C1, first cubital or fifth longitudinal vein; M1, first medial or apical crossvein; M2, second medial or fourth longitudinal vein; M3, third medial or hind crossvein; 3M, third medial or discal cell; R1, first radial or first longitudinal vein; R3, third radial or second longitudinal vein; R5, fifth radial or third longitudinal vein; 5R, fifth radial or apical cell; R6, sixth radial or small crossvein; S1, first subcostal or humeral crossvein; S2, second subcostal or axillary vein.

This system, which is completely given above in analysis, has grown out of the necessity for recording over 150 characters on a single card to be filed either in alphabetic order or by tribes. The standard 5- by 8-inch cards were at first used when less than half as many characters were tabulated. With the increased characters found desirable to record, it has become necessary to use 7- by 11-inch cards.

The great saving of space in these tabulations suggested the considerable advantage of employing the system in publication, thereby saving 50 per cent. of the cost in paper, typesetting, proofreading, ink, presswork, folding and binding, as well as carriage of the completed publication. Further, it was shortly recognized that the system will prove a time- and eye-saver to the student, for it greatly facilitates reference. It is far easier and requires much less time to scan a description that is all on one or at most two pages, than to have to turn and laboriously wade through a text that covers at least two pages and may run on parts of four pages. It also saves a great amount of time in preparation of manuscripts. Altogether, the system most highly commends itself to the busy student.